US008991234B2

(12) **United States Patent**
Huang et al.

(10) **Patent No.: US 8,991,234 B2**
(45) **Date of Patent: Mar. 31, 2015**

(54) **VALPROIC ACID BIOSENSOR AND METHOD FOR MEASURING CONCENTRATION OF VALPROIC ACID**

(71) Applicant: **National Taiwan University**, Taipei (TW)

(72) Inventors: **Long-Sun Huang**, Taipei (TW); **Kai-Fung Chang**, Taipei (TW); **Yu-Chen Chang**, Taipei (TW)

(73) Assignee: **National Taiwan University**, Taipei (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/956,259**

(22) Filed: **Jul. 31, 2013**

(65) **Prior Publication Data**

US 2014/0209484 A1 Jul. 31, 2014

(30) **Foreign Application Priority Data**

Jan. 28, 2013 (TW) ..... 102103203 A

(51) **Int. Cl.**

G01N 29/00	(2006.01)
G01N 29/02	(2006.01)
G01N 29/04	(2006.01)
G01N 29/22	(2006.01)
G01N 29/24	(2006.01)
G01N 27/414	(2006.01)
G01N 33/94	(2006.01)

(52) **U.S. Cl.**

CPC ***G01N 27/4145*** (2013.01); ***G01N 33/9473*** (2013.01)

USPC **73/24.06**; 73/23.2; 73/24.01; 422/50; 422/68.1; 422/82.01; 422/82.02

(58) **Field of Classification Search**

USPC 73/24.01–24.06; 422/68.1

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,730,767 B2 6/2010 Huang et al.
8,169,124 B2 5/2012 Lee et al.

FOREIGN PATENT DOCUMENTS

TW I346777 2/2009

OTHER PUBLICATIONS

Stubbs, Desmond D., Sang-Hun Lee, and William D. Hunt. "Vapor phase detection of a narcotic using surface acoustic wave immunoassay sensors."Sensors Journal, IEEE 5.3 (2005): 335-339.*

* cited by examiner

Primary Examiner — Paul Hyun
Assistant Examiner — Robert Eom
(74) *Attorney, Agent, or Firm* — Huffman Law Group, PC

(57) **ABSTRACT**

The present disclosure relates to a valproic acid biosensor. In some embodiments, the valproic acid biosensor may comprise a microcantilever, a self-assembly monolayer, and a valproic acid antibody layer. The self-assembly monolayer may immobilize on the microcantilever surface. The valproic acid antibody layer may immobilize on the self-assembly monolayer. The valproic acid antibody layer may be used to bind with valproic acid drug samples. The present disclosure further relates to methods for measuring the concentration of valproic acid drug samples.

11 Claims, 11 Drawing Sheets